

WHAT IS CLAIMED IS:

1. An image processing method of analyzing a pixel value of a pixel of interest and pixel values in an adjacent region of the pixel of interest, the adjacent region being formed by neighboring pixels of the pixel of interest, and setting an image correction condition, comprising the steps of:

dividing an adjacent region of a first pixel of interest into a plurality of regions formed from pixel values in a scan direction and in a direction perpendicular to the scan direction, analyzing the pixel values in each of the divided regions, and holding an analysis result for each of the divided regions;

obtaining an image correction condition for the first pixel of interest from the analysis result of each divided region belonging to the adjacent region of the first pixel of interest and correcting the first pixel of interest using the image correction condition;

in order to obtain an image correction condition for a second pixel of interest moved from the first pixel of interest in the scan direction, executing analysis for a difference region between the first adjacent region and an adjacent region of the second pixel of interest on the basis of pixel values in a region which belongs to the difference region and is formed from pixel values in the scan direction and in

the direction perpendicular to the scan direction, and holding an analysis result; and

obtaining the correction condition for the second pixel of interest from the analysis result of the

5 region belonging to the adjacent region of the second pixel of interest and correcting the second pixel of interest using the image correction condition.

2. An image processing apparatus for performing color matching by using a human color appearance model,  
10 comprising:

an input section, arranged to input a distance between an image and a viewer, and a resolution of the image; and

a processor, arranged to define regions based on  
15 a plurality of field angles with respect to a pixel of interest on the image, on the basis of the input distance and resolution, thereby performing color matching,

wherein said processor performs arithmetic  
20 operation for a difference region between the regions based on the plurality of field angles, which are generated by moving the pixel of interest, to obtain an arithmetic result for the regions based on the plurality of field angles after movement of the pixel  
25 of interest.

3. The apparatus according to claim 2, wherein at least 2°, 4°, and 10° are used as the plurality of

field angles.

4. The apparatus according to claim 2, wherein said processor approximates circular regions corresponding to the plurality of field angles to square regions to  
5 increase the speed of processing in the regions.

5. The apparatus according to claim 2, wherein said processor determines a viewing condition parameter for the pixel of interest by using pixel values of regions corresponding to the plurality of field angles.

10 6. The apparatus according to claim 2, wherein on the basis of the uniformity of the image within the field angle of a color chip in the human color appearance model, said processor employs a parameter selected from the group consisting of "larger than the  
15 field angle of the color chip" or "not more than the field angle of the color chip" as an average surrounding viewing condition parameter.

7. The apparatus according to claim 2, wherein said processor sets the average relative luminance of a  
20 background region with respect to the pixel of interest as a viewing condition parameter for the pixel of interest.

8. The apparatus according to claim 2, wherein said processor increases a speed of processing performed  
25 near an edge of the image by setting a specific value for omitted pixels in an adjacent region and a background region.

9. The apparatus according to claim 8, wherein the specific value is selected from the group consisting of a luminance of 100%, a luminance of 20%, and the relative luminance of a surrounding region.
- 5 10. The apparatus according to claim 2, wherein said processor determines a viewing condition parameter for each object on a vector image by using the ranges of regions corresponding to the plurality of field angles.
11. The apparatus according to claim 2, further
- 10 comprising a sensor, arranged to measure the distance between the image and the viewer.
12. The apparatus according to claim 2, further comprising an interface, arranged to input the distance between the image and the viewer.
- 15 13. The apparatus according to claim 2, further comprising an interface, arranged to input the relative luminance of a portion selected from the group consisting of the edge and the frame of the image.
14. An image processing method of performing color
- 20 matching by using a human color appearance model, comprising the steps of:
- inputting a distance between an image and a viewer, and a resolution of the image; and
- defining regions based on a plurality of field
- 25 angles with respect to a pixel of interest on the image, on the basis of the input distance and resolution, thereby performing color matching.

15. The method according to claim 14, further comprising the step of, in performing color matching, performing arithmetic operation for a difference region between the regions based on the plurality of field angles, which are generated by moving the pixel of interest, to obtain an arithmetic result for the regions based on the plurality of field angles after movement of the pixel of interest.

16. A computer program product storing a computer readable medium comprising a computer program code, for an image processing method of analyzing a pixel value of a pixel of interest and pixel values in an adjacent region of the pixel of interest, which is formed by neighboring pixels of the pixel of interest, and setting an image correction condition, comprising process procedure code for:

dividing an adjacent region of a first pixel of interest into a plurality of regions formed from pixel values in a scan direction and in a direction perpendicular to the scan direction, analyzing the pixel values in each of the divided regions, and holding an analysis result for each of the divided regions;

obtaining an image correction condition for the first pixel of interest from the analysis result of each divided region belonging to the adjacent region of the first pixel of interest and correcting the first

pixel of interest using the image correction condition;

to obtain an image correction condition for a  
second pixel of interest moved from the first pixel of  
interest in the scan direction, executing analysis for  
5 a difference region between the first adjacent region  
and an adjacent region of the second pixel of interest  
on the basis of pixel values in a region which belongs  
to the difference region and is formed from pixel  
values in the scan direction and in the direction  
10 perpendicular to the scan direction, and holding an  
analysis result; and

obtaining the correction condition for the second  
pixel of interest from the analysis result of the  
region belonging to the adjacent region of the second  
15 pixel of interest and correcting the second pixel of  
interest using the image correction condition.

17. A computer program product storing a computer  
readable medium comprising a computer program code, for  
an image processing method of performing color matching  
20 by using a human color appearance model, comprising  
process procedure code for:

inputting a distance between an image and a  
viewer, and a resolution of the image; and

defining regions based on a plurality of field  
25 angles with respect to a pixel of interest on the image,  
on the basis of the input distance and resolution,  
thereby performing color matching.

18. The product according to claim 17, further  
comprising process procedure code for, in performing  
color matching, performing arithmetic operation for a  
difference region between the regions based on the  
5 plurality of field angles, which are generated by  
moving the pixel of interest, to obtain an arithmetic  
result for the regions based on the plurality of field  
angles after movement of the pixel of interest.